

Aircraft Engine and Engine Parts Manufacturing: 2002

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2002 Economic Census

Manufacturing

Industry Series



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U.S. Department of Commerce
Economics and Statistics Administration
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-- Not applicable for this report.

Table 1. Historical Statistics for the Industry: 2002 and Earlier Years

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

| Industry and year ¹ | Com- panies ² | All estab- lish- ments ³ | All employees | | Production workers | | | Value added (\$1,000) | Total cost of materials (\$1,000) | Total value of shipments (\$1,000) | Total capital expendi- tures (\$1,000) | |
|---|-----------------------------|--|---------------------|----------------------|---------------------|------------------|--------------------|-----------------------------|--|---|---|---------|
| | | | Number ⁴ | Payroll (\$1,000) | Number ⁴ | Hours (1,000) | Wages (\$1,000) | | | | | |
| 336412, Aircraft engine and engine parts manufacturing | 2002... | 297 | 412 | 72 284 | 4 113 338 | 40 571 | 82 995 | 1 934 940 | 12 358 820 | 11 629 474 | 24 246 374 | 873 997 |
| | 2001... | N | N | 79 914 | 4 522 857 | 47 352 | 94 016 | 2 115 547 | 14 093 813 | 13 566 069 | 27 490 309 | 895 672 |
| | 2000... | N | N | 81 961 | 4 503 839 | 47 153 | 94 732 | 2 014 505 | 12 633 195 | 12 430 469 | 25 124 669 | 695 490 |
| | 1999... | N | N | 85 111 | 4 520 839 | 49 642 | 99 084 | 1 985 607 | 11 724 627 | 12 040 018 | 24 343 001 | 787 085 |
| | 1998... | N | N | 84 617 | 4 292 039 | 49 398 | 103 820 | 2 034 279 | 12 959 853 | 12 031 522 | 24 868 538 | 733 431 |
| | 1997... | 281 | 372 | 84 373 | 4 298 767 | 49 122 | 100 963 | 1 971 070 | 11 679 669 | 11 437 209 | 22 859 270 | 679 800 |

¹Statistics presented for years ending in 2 and 7 are census data. Interim census years are derived in a representative sample of manufacturing establishments canvassed in the Annual Survey of Manufactures (ASM).

²For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during the year.

⁴Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 2. Industry Statistics for Selected States: 2002

[States that are a disclosure or with less than 100 employees are not shown. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographical definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

| Industry and geographic area | E ¹ | All establishments ² | | All employees | | Production workers | | | Value added (\$1,000) | Total cost of materials (\$1,000) | Total value of shipments (\$1,000) | Total capital expenditures (\$1,000) |
|---|----------------|---------------------------------|---------------------------|---------------------|-------------------|---------------------|---------------|-----------------|-----------------------|-----------------------------------|------------------------------------|--------------------------------------|
| | | Total | With 20 employees or more | Number ³ | Payroll (\$1,000) | Number ³ | Hours (1,000) | Wages (\$1,000) | | | | |
| 336412, Aircraft engine and engine parts manufacturing | | | | | | | | | | | | |
| United States | — | 412 | 249 | 72 284 | 4 113 338 | 40 571 | 82 995 | 1 934 940 | 12 358 820 | 11 629 474 | 24 246 374 | 873 997 |
| Arizona | — | 28 | 15 | 5 577 | 311 891 | 2 411 | 4 481 | 92 123 | 2 001 386 | 963 015 | 2 992 104 | 41 713 |
| Florida | 5 | 27 | 15 | 1 633 | 79 016 | 1 067 | 2 685 | 45 131 | 163 140 | 149 683 | 325 763 | 15 409 |
| Georgia | — | 9 | 8 | 1 948 | 64 559 | 1 594 | 3 114 | 47 435 | 236 711 | 138 952 | 369 543 | 6 002 |
| Indiana | — | 14 | 10 | 5 815 | 393 023 | 2 710 | 5 111 | 166 848 | 1 132 221 | 603 050 | 1 749 387 | 37 570 |
| Michigan | — | 21 | 16 | 3 160 | 152 629 | 2 169 | 3 315 | 93 342 | 276 271 | 185 862 | 463 075 | 31 076 |
| New York | 2 | 19 | 13 | 2 846 | 120 014 | 1 910 | 4 184 | 69 377 | 259 019 | 171 714 | 430 024 | 21 423 |
| Pennsylvania | — | 9 | 6 | 1 211 | 57 477 | 794 | 1 605 | 32 509 | 79 571 | 202 294 | 281 584 | 5 861 |

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Table 3. Detailed Statistics by Industry: 2002

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

| Item | Value |
|--|-----------------------|
| 336412, Aircraft engine and engine parts manufacturing | |
| Companies ¹ | number.. 297 |
| All establishments ² | number.. 412 |
| Establishments with 1 to 19 employees | number.. 162 |
| Establishments with 20 to 99 employees | number.. 119 |
| Establishments with 100 employees or more | number.. 130 |
| All employees ³ | number.. 72 284 |
| Total compensation | \$1,000.. 5 398 771 |
| Annual payroll | \$1,000.. 4 113 338 |
| Total fringe benefits | \$1,000.. 1 285 433 |
| Production workers, average for year | number.. 40 571 |
| Production workers on March 12 | number.. 39 760 |
| Production workers on May 12 | number.. 41 378 |
| Production workers on August 12 | number.. 40 875 |
| Production workers on November 12 | number.. 40 210 |
| Production worker hours | 1,000.. 82 995 |
| Production worker wages | \$1,000.. 1 934 940 |
| Total cost of materials | \$1,000.. 11 629 474 |
| Materials, parts, containers, packaging, etc., used | \$1,000.. 9 713 736 |
| Resales | \$1,000.. 1 038 137 |
| Purchased fuels | \$1,000.. 53 074 |
| Purchased electricity | \$1,000.. 130 001 |
| Contract work | \$1,000.. 694 526 |
| Quantity of electricity purchased for heat and power | 1,000 kWh.. 2 173 419 |
| Quantity of electricity generated less sold for heat and power | 1,000 kWh.. 205 473 |
| Total value of shipments | \$1,000.. 24 246 374 |
| Primary products value of shipments | \$1,000.. 20 616 800 |
| Secondary products value of shipments | \$1,000.. 2 547 420 |
| Total miscellaneous receipts | \$1,000.. 1 082 154 |
| Value of resales | \$1,000.. 1 057 767 |
| Contract receipts | \$1,000.. 12 729 |
| Other miscellaneous receipts | \$1,000.. 11 658 |
| Primary products specialization ratio | percent.. 89 |
| Value of primary products shipments made in all industries | \$1,000.. 21 267 717 |
| Value of primary products shipments made in this industry | \$1,000.. 20 616 800 |
| Value of primary products shipments made in other industries | \$1,000.. 650 917 |
| Coverage ratio | percent.. 97 |
| Value added | \$1,000.. 12 358 820 |
| Total inventories, beginning of year | \$1,000.. 3 205 424 |
| Finished goods inventories | \$1,000.. 1 169 432 |
| Work-in-process inventories | \$1,000.. 1 515 626 |
| Materials and supplies inventories | \$1,000.. 520 366 |
| Total inventories, end of year | \$1,000.. 3 083 230 |
| Finished goods inventories | \$1,000.. 1 026 246 |
| Work-in-process inventories | \$1,000.. 1 400 732 |
| Materials and supplies inventories | \$1,000.. 656 252 |
| Gross value of depreciable assets (acquisition costs) at beginning of year | \$1,000.. 6 778 096 |
| Total capital expenditures (new and used) | \$1,000.. 873 997 |
| Buildings and other structures (new and used) | \$1,000.. 111 792 |
| Machinery and equipment (new and used) | \$1,000.. 762 205 |
| Automobiles, trucks, etc., for highway use | \$1,000.. 9 103 |
| Computers and peripheral data processing equipment | \$1,000.. 72 748 |
| All other expenditures for machinery and equipment | \$1,000.. 680 354 |
| Total retirements | \$1,000.. 455 571 |
| Gross value of depreciable assets at end of year | \$1,000.. 7 196 522 |
| Depreciation charges during year | \$1,000.. 429 671 |
| Total rental payments | \$1,000.. 118 135 |
| Buildings and other structures | \$1,000.. 63 532 |
| Machinery and equipment | \$1,000.. 54 603 |
| Total other expenses ⁴ | \$1,000.. 1 165 730 |
| Response coverage ratio ⁵ | percent.. 61 |
| Repair and maintenance services of buildings and/or machinery ⁴ | \$1,000.. 76 128 |
| Communications services ⁴ | \$1,000.. 30 525 |
| Legal services ⁴ | \$1,000.. 115 833 |
| Accounting, auditing, and bookkeeping services ⁴ | \$1,000.. 15 978 |
| Advertising and promotional services ⁴ | \$1,000.. 10 208 |
| Expensed computer hardware and supplies and purchased computer services ⁴ | \$1,000.. 111 569 |
| Refuse removal (including hazardous waste) services ⁴ | \$1,000.. 11 328 |
| Management consulting and administrative services ⁴ | \$1,000.. 279 322 |
| Taxes and license fees ⁴ | \$1,000.. 30 945 |
| All other expenses ⁴ | \$1,000.. 483 893 |

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

⁴Based on Annual Survey of Manufactures (ASM) sample data.

⁵A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those Annual Survey of Manufactures (ASM) establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note 1: The amounts shown for other expenses reflect only those services that establishments purchase from other companies.

Note 2: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 4. Industry Statistics by Employment Size: 2002

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

| Employment size class | E ¹ | All establishments ² | All employees | | Production workers | | | Value added (\$1,000) | Total cost of materials (\$1,000) | Total value of shipments (\$1,000) | Total capital expenditures (\$1,000) |
|--|----------------|---------------------------------|---------------------|-------------------|---------------------|---------------|-----------------|-----------------------|-----------------------------------|------------------------------------|--------------------------------------|
| | | | Number ³ | Payroll (\$1,000) | Number ³ | Hours (1,000) | Wages (\$1,000) | | | | |
| 336412, Aircraft engine and engine parts manufacturing | | | | | | | | | | | |
| All establishments | — | 412 | 72 284 | 4 113 338 | 40 571 | 82 995 | 1 934 940 | 12 358 820 | 11 629 474 | 24 246 374 | 873 997 |
| Establishments with— | | | | | | | | | | | |
| 1 to 4 employees | 7 | 83 | 198 | 11 393 | 143 | 293 | 8 108 | 23 267 | 21 079 | 44 442 | 2 127 |
| 5 to 9 employees | 6 | 39 | 261 | 13 234 | 196 | 388 | 8 379 | 34 439 | 36 555 | 70 528 | 3 629 |
| 10 to 19 employees | 6 | 41 | 565 | 28 210 | 411 | 845 | 17 467 | 58 386 | 61 045 | 120 934 | 5 932 |
| 20 to 49 employees | 2 | 59 | 1 974 | 88 610 | 1 388 | 2 858 | 51 630 | 203 023 | 159 352 | 352 126 | 20 080 |
| 50 to 99 employees | — | 60 | 4 405 | 199 883 | 3 021 | 6 094 | 114 639 | 373 006 | 268 397 | 645 530 | 41 077 |
| 100 to 249 employees | 1 | 81 | 12 867 | 621 187 | 8 462 | 17 536 | 355 018 | 1 346 211 | 1 882 457 | 3 222 706 | 107 984 |
| 250 to 499 employees | 1 | 23 | 7 795 | 350 619 | 5 842 | 12 236 | 229 450 | 1 017 672 | 742 402 | 1 739 808 | 62 884 |
| 500 to 999 employees | — | 17 | 11 564 | 570 985 | 8 588 | 17 700 | 384 141 | 1 606 789 | 1 869 839 | 3 547 231 | 77 580 |
| 1,000 to 2,499 employees | — | 3 | 3 590 | 180 346 | 2 952 | 5 051 | 142 099 | 398 482 | 366 332 | 802 480 | 32 742 |
| 2,500 employees or more | — | 6 | 29 065 | 2 048 871 | 9 568 | 19 994 | 624 009 | 7 297 545 | 6 222 016 | 13 700 589 | 519 962 |
| Administrative records ⁴ | 9 | 110 | 628 | 32 143 | 472 | 987 | 19 888 | 69 207 | 73 639 | 142 840 | 9 008 |

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

⁴Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 5. Industry Statistics by Primary Product Class Specialization: 2002

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

| Industry or product class code | Industry or primary product class | All establishments ¹ | All employees | | Production workers | | | Value added (\$1,000) | Total cost of materials (\$1,000) | Total value of shipments (\$1,000) | Total capital expenditures (\$1,000) |
|--------------------------------|---|---------------------------------|---------------------|-------------------|---------------------|---------------|-----------------|-----------------------|-----------------------------------|------------------------------------|--------------------------------------|
| | | | Number ² | Payroll (\$1,000) | Number ² | Hours (1,000) | Wages (\$1,000) | | | | |
| 336412 | Aircraft engine and engine parts manufacturing | 412 | 72 284 | 4 113 338 | 40 571 | 82 995 | 1 934 940 | 12 358 820 | 11 629 474 | 24 246 374 | 873 997 |
| 3364121 | Military aircraft engines (including other aircraft engines built to military specifications) | 13 | 1 155 | 52 585 | 843 | 1 737 | 35 941 | 138 678 | 140 563 | 279 076 | 4 997 |
| 3364123 | Civilian aircraft engines | 53 | 30 368 | 1 945 663 | 13 235 | 27 187 | 733 321 | 5 222 768 | 5 168 577 | 10 583 421 | 497 462 |
| 3364125 | Aeronautical services on aircraft engines | 32 | 3 988 | 209 213 | 2 904 | 6 481 | 135 065 | 527 675 | 977 229 | 1 506 776 | 35 960 |
| 3364127 | Aircraft engine parts and accessories | 154 | 34 124 | 1 772 972 | 21 639 | 43 488 | 950 155 | 6 204 476 | 5 073 855 | 11 321 687 | 288 739 |

¹Includes establishments with payroll at any time during the year.

²Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6a. Products Statistics: 2002 and 1997

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

| Product code | Product | Number of companies with shipments of \$100,000 or more | Quantity of production for all purposes | Product shipments | |
|--------------|--|---|---|-------------------|--------------------------|
| | | | | Quantity | Value (\$1,000) |
| 336412 | Aircraft engine and engine parts manufacturing | 2002.. N 1997.. N | X X | X X | 21 267 717 20 077 240 |
| 3364121 | Military aircraft engines (including other aircraft engines built to military specifications) | 2002.. N 1997.. N | X X | X X | 1 805 031 1 714 270 |
| 33641211 | Military aircraft engines (including other aircraft engines built to military specifications) | 2002.. N 1997.. N | X X | X X | 1 805 031 1 714 270 |
| 3364121100 | Military aircraft engines (including other aircraft engines built to military specifications) | 2002.. 27 1997.. 21 | X X | X X | 1 805 031 1 714 270 |
| 3364123 | Civilian aircraft engines | 2002.. N 1997.. N | X X | X X | 5 949 864 5 372 076 |
| 33641231 | Civilian aircraft engines | 2002.. N 1997.. N | X X | X X | 5 949 864 5 372 076 |
| 3364123100 | Civilian aircraft engines ¹ | 2002.. 56 1997.. 42 | X X | X X | 5 949 864 5 372 076 |
| 3364125 | Aeronautical services on aircraft engines | 2002.. N 1997.. N | X X | X X | 3 539 697 3 220 840 |
| 33641251 | Aeronautical services on aircraft engines | 2002.. N 1997.. N | X X | X X | 3 274 994 3 008 837 |
| 3364125101 | Research and development work on military aircraft engines (including other aircraft engines built to military specifications) | 2002.. 8 1997.. 9 | X X | X X | D D |
| 3364125104 | Research and development work on civilian aircraft engines | 2002.. 6 1997.. 8 | X X | X X | D D |
| 3364125107 | All other aeronautical services on military aircraft engines (including other aircraft engines built to military specifications) | 2002.. 11 1997.. 15 | X X | X X | 517 319 732 241 |
| 3364125111 | All other aeronautical services on civilian aircraft engines | 2002.. 21 1997.. 20 | X X | X X | 2 394 033 1 513 859 |
| 3364125Y | Aeronautical services on aircraft engines, nsk | 2002.. N 1997.. N | X X | X X | 264 703 212 003 |
| 3364125YVV | Aeronautical services on aircraft engines, nsk | 2002.. N 1997.. N | X X | X X | 264 703 212 003 |
| 3364127 | Aircraft engine parts and accessories | 2002.. N 1997.. N | X X | X X | 9 578 838 9 355 897 |
| 33641271 | Parts and accessories for spark ignition reciprocating and rotary internal combustion military aircraft engines | 2002.. N 1997.. N | X X | X X | 1 044 563 1 880 583 |
| 3364127101 | Parts and accessories for spark ignition reciprocating and rotary internal combustion military aircraft engines | 2002.. 34 1997.. 32 | X X | X X | 1 044 563 1 880 583 |
| 33641272 | Parts and accessories for other military aircraft engines | 2002.. N 1997.. N | X X | X X | 1 270 675 646 988 |
| 3364127204 | Parts and accessories for other military aircraft engines | 2002.. 59 1997.. 67 | X X | X X | 1 270 675 646 988 |
| 33641273 | Parts and accessories for spark ignition reciprocating and rotary internal combustion civilian aircraft engines | 2002.. N 1997.. N | X X | X X | 3 270 355 4 158 356 |
| 3364127307 | Parts and accessories for spark ignition reciprocating and rotary internal combustion civilian aircraft engines | 2002.. 52 1997.. 59 | X X | X X | 3 270 355 4 158 356 |
| 33641274 | Parts and accessories for other civilian aircraft engines | 2002.. N 1997.. N | X X | X X | 3 706 623 2 058 653 |
| 3364127411 | Parts and accessories for other civilian aircraft engines | 2002.. 76 1997.. 84 | X X | X X | 3 706 623 2 058 653 |
| 3364127Y | Aircraft engine parts and accessories, nsk | 2002.. N 1997.. N | X X | X X | 286 622 611 317 |
| 3364127YVV | Aircraft engine parts and accessories, nsk | 2002.. N 1997.. N | X X | X X | 286 622 611 317 |
| 336412W | Aircraft engine and engine parts manufacturing, nsk, total | 2002.. N 1997.. N | X X | X X | 394 287 414 157 |
| 336412WY | Aircraft engine and engine parts manufacturing, nsk, total | 2002.. N 1997.. N | X X | X X | 394 287 414 157 |
| 336412WYWW | Aircraft engine and engine parts manufacturing, nsk, for nonadministrative-record establishments | 2002.. N 1997.. N | X X | X X | 258 824 364 729 |
| 336412WYWY | Aircraft engine and engine parts manufacturing, nsk, for administrative-record establishments | 2002.. N 1997.. N | X X | X X | 135 463 49 428 |

¹For additional detail, see Current Industrial Report M336G, Civil Aircraft and Aircraft Engines.

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6b. Product Class Shipments for Selected States: 2002 and 1997

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 2002. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographic definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

| NAICS product class code | Product class and geographic area | Value of product shipments (\$1,000) |
|--------------------------|---|--------------------------------------|
| 3364121 | Military aircraft engines (including other aircraft engines built to military specifications) | |
| | United States 2002 .. | 1 805 031 |
| | 1997 .. | 1 714 270 |
| 3364123 | Civilian aircraft engines | |
| | United States 2002 .. | 5 949 864 |
| | 1997 .. | 5 372 076 |
| | Michigan 2002 .. | 46 048 |
| | 1997 .. | 44 576 |
| 3364125 | Aeronautical services on aircraft engines | |
| | United States 2002 .. | 3 539 697 |
| | 1997 .. | 3 220 840 |
| 3364127 | Aircraft engine parts and accessories | |
| | United States 2002 .. | 9 578 838 |
| | 1997 .. | 9 355 897 |
| | Arizona 2002 .. | 1 031 664 |
| | 1997 .. | 497 197 |
| | Florida 2002 .. | 143 180 |
| | 1997 .. | 823 570 |
| | Georgia 2002 .. | 238 669 |
| | 1997 .. | 301 296 |
| | Indiana 2002 .. | 508 264 |
| | 1997 .. | 485 346 |
| | Michigan 2002 .. | 272 448 |
| | 1997 .. | 234 337 |
| | New York 2002 .. | 293 367 |
| | 1997 .. | 287 550 |
| | Pennsylvania 2002 .. | 110 073 |
| | 1997 .. | 185 737 |

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Table 7. Materials Consumed by Kind: 2002 and 1997

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

| Material code | Material consumed | Quantity | Delivered cost (\$1,000) |
|---------------|---|----------|--------------------------|
| 336412 | Aircraft engine and engine parts manufacturing | | |
| 0090001 | Total materials | X | 9 713 736 |
| |2002.. | X | 9 259 160 |
| |1997.. | X | D |
| 33641201 | Aircraft engines | X | D |
| |2002.. | X | 249 248 |
| |1997.. | X | 5 189 708 |
| 33641203 | Aircraft engine parts (excluding instruments) | X | 5 174 339 |
| |2002.. | X | |
| |1997.. | X | |
| 33641303 | Structural fuselage components (excluding instruments) | X | 594 |
| |2002.. | X | N |
| |1997.. | X | N |
| 33641305 | Structural empennage (tail) components (excluding instruments) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33641307 | Structural wing components (excluding instruments) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33641309 | Structural landing gear components | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33641311 | Other structural components (airframe), including engine mounts (excluding instruments) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33641301 | Aircraft propellers and parts | X | 520 |
| |2002.. | X | N |
| |1997.. | X | N |
| 33422003 | Radio communication systems and equipment, including airborne transmitters and receivers (microwave, UHF, VHF, etc.) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33451103 | Navigational systems and equipment (NAVAIDS) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 001900D5 | Search, detection, tracking, and electronic communication systems and equipment (RADAR, SONAR, and optical) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33400025 | Flight, navigational, airframe, and engine indicators, instruments, and clusters (including sensors, displays, etc.) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 001900B7 | Resistors, capacitors, transformers, electron tubes, semiconductors, and other electronic components | X | 84 621 |
| |2002.. | X | N |
| |1997.. | X | N |
| 00190070 | Resin matrix composites | X | 9 974 |
| |2002.. | X | N |
| |1997.. | X | N |
| 00190071 | Other matrix composites (including ceramic, carbon, metal, etc.) | X | 23 714 |
| |2002.. | X | 16 014 |
| |1997.. | X | 71 650 |
| 33291209 | Complete mechanical, hydraulic and pneumatic subassemblies | X | 20 606 |
| |2002.. | X | D |
| |1997.. | X | N |
| 33399601 | Fluid power pumps, motors, and hydrostatic transmissions (hydraulic and pneumatic) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33291201 | Fluid power valves (excluding complete assemblies) | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33291203 | Fluid power hose and tube fittings and assemblies (hydraulic and pneumatic) | X | 12 174 |
| |2002.. | X | N |
| |1997.. | X | N |
| 33399503 | Fluid power cylinders and rotary actuators (excluding complete assemblies) | X | 1 488 |
| |2002.. | X | N |
| |1997.. | X | N |
| 33399901 | Fluid power filters (hydraulic and pneumatic) | X | 2 122 |
| |2002.. | X | N |
| |1997.. | X | N |
| 00190087 | Other transportation related fluid power products, hydraulic and pneumatic | X | D |
| |2002.. | X | N |
| |1997.. | X | N |
| 33299101 | Ball and roller bearings (mounted or unmounted) | X | 38 011 |
| |2002.. | X | 24 151 |
| |1997.. | X | |
| 33351503 | Cutting tools for machine tools | X | 26 481 |
| |2002.. | X | 16 270 |
| |1997.. | X | D |
| 33251015 | Aircraft metal hardware (excluding forgings) | X | D |
| |2002.. | X | 181 081 |
| |1997.. | X | 40 710 |
| 33272203 | Metal bolts, nuts, screws, washers, rivets, and other screw machine products | X | 29 104 |
| |2002.. | X | |
| |1997.. | X | |
| 33200009 | Other fabricated metal products (excluding fluid power, forgings, aircraft metal hardware and bolts, nuts, screws, washers, rivets, and other screw machine products) | X | 35 461 |
| |2002.. | X | 51 984 |
| |1997.. | X | 80 359 |
| 33211101 | Iron and steel forgings | X | 185 520 |
| |2002.. | X | 39 758 |
| |1997.. | X | 19 800 |
| 33211203 | Aluminum and aluminum-base alloy forgings | X | |
| |2002.. | X | 156 774 |
| |1997.. | X | 114 733 |
| 33210003 | Other forgings | X | 67 635 |
| |2002.. | X | 58 714 |
| |1997.. | X | 266 920 |
| 33151001 | Iron and steel castings (rough and semifinished) | X | 223 091 |
| |2002.. | X | |
| |1997.. | X | |
| 33152005 | Aluminum and aluminum-base alloy castings (rough and semifinished) | X | 23 362 |
| |2002.. | X | 28 193 |
| |1997.. | X | |
| 33152003 | Other nonferrous metalcastings, rough and semifinished (excluding aluminum and aluminum-base alloy) | X | 83 853 |
| |2002.. | X | 77 723 |
| |1997.. | X | 37 224 |
| 33120007 | Steel bars, bar shapes, and plate (excluding castings, forgings, and fabricated metal products) | X | 110 184 |
| |2002.. | X | |
| |1997.. | X | |
| 33120016 | Steel sheet and strip (including tinplate) | X | 42 946 |
| |2002.. | X | N |
| |1997.. | X | N |
| 33120033 | All other steel shapes and forms (excluding castings, forgings, and fabricated metal products) | X | 13 136 |
| |2002.. | X | 10 883 |
| |1997.. | X | 5 022 |
| 33131500 | Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing | X | N |
| |2002.. | X | |
| |1997.. | X | |
| 33100055 | All other aluminum and aluminum-base alloy shapes and forms (excluding castings, forgings, and fabricated metal products) | X | 11 524 |
| |2002.. | X | 1 391 |
| |1997.. | X | |
| 33142111 | Copper and copper-base alloy shapes and forms (excluding castings, forgings, and fabricated metal products) | X | 1 994 |
| |2002.. | X | 230 |
| |1997.. | X | |
| 33149100 | Titanium and titanium-base alloy shapes and forms (excluding castings, forgings, and fabricated metal products) | X | 30 692 |
| |2002.. | X | N |
| |1997.. | X | |

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 2002 and 1997—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

| Material code | Material consumed | Quantity | Delivered cost (\$1,000) |
|---------------|--|----------|--------------------------|
| 336412 | Aircraft engine and engine parts manufacturing—Con. | | |
| 33100065 | Other nonferrous shapes and forms (excluding aluminum and aluminum-base alloy, copper and copper-base alloy, and titanium and titanium-base alloy castings, forgings, and fabricated metal products) | | |
| |2002.. | X | 28 288 |
| |1997.. | X | 32 263 |
| 32551002 | Paints, varnishes, stains, lacquers, shellacs, japans, enamels, and allied product | X | 1 211 |
| |2002.. | X | N |
| |1997.. | X | |
| 00970099 | All other materials and components, parts, containers, and supplies | X | 226 084 |
| |2002.. | X | 609 624 |
| |1997.. | X | |
| 00971000 | Materials, ingredients, containers, and supplies, nsk | X | 1 694 731 |
| |2002.. | X | |
| |1997.. | X | 2 024 014 |

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p—10 to 19 percent estimated; q—20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.